North American Drought Monitor – January 2007

CANADA: With the exception of some interior and northeast regions, most of British Columbia (B.C.) received above normal precipitation in January. Conversely, much of the southern prairies, including regions into central Alberta, and parts of northwestern Ontario continued to receive below normal precipitation and warmer than normal temperatures, resulting in low snowpacks and reduced river flow. For the rest of eastern Canada, winter finally arrived mid-month, bringing with it cooler temperatures and typical winter conditions. By the end of the month, these conditions rapidly faded and resulted in well-above average monthly temperatures. In the Atlantic region, typical winter also persisted, however much of New Brunswick, Nova Scotia and Prince Edward Island received lower than normal snowfall.

British Columbia (B.C.): B.C. continued to receive above normal precipitation throughout all regions of the province with the exception of a small region of the southern interior and a very small region in the far northeast around Fort Nelson. Areas of northern B.C. that have been dealing with drought for the past couple years continued to get average to above average precipitation. Snowpack and snow water indices across B.C. were all above normal, ranging from 106% of normal in the Okanagan to greater than 160% of normal along the Pacific coast (record or near record snowpacks for the time of year). Northern regions that experienced significant drought this past year show well above normal snowpacks (120-140%), resulting in increased optimism for the upcoming agricultural season. D0-D2 drought classifications remain in the Peace Region of northern B.C. because of significant water deficits that existed at the time of freeze up. Depending upon precipitation through the rest of the winter and the speed of the spring melt, these conditions are expected to improve significantly in the spring.

Alberta: January was drier than normal across most of Alberta, resulting in an expansion of the drought areas in both southern and northern regions. Precipitation in most mountain areas was below normal to normal, while in the remainder of the province it was generally much below normal. Only the Peace region of northwestern Alberta recorded above normal precipitation. Current predictions forecast below average to much below average runoff for southern regions, much above average for central regions, above average for the Peace region and below average to average for northern areas.

Saskatchewan: Conditions in Saskatchewan remain relatively unchanged from previous months. Above normal snowfall continues throughout central and northern regions of the province, while below normal precipitation has been received in the south. Central and northern regions received up to 310 % of normal precipitation in January, while areas in the southwest received between 35 and 65% of normal. Conditions in the southeast have improved slightly with above normal precipitation for the third consecutive month. The provincial streamflow forecast for Saskatchewan shows the potential for very high runoff in central portions of the province due to above average winter precipitation, combined with the very wet fall. Below average runoff is currently predicted in much of southern Saskatchewan.

Manitoba: Much of Manitoba continued to receive near normal precipitation throughout the month of January, however, it must be noted that the precipitation recorded has also been highly variable throughout the southern regions. Higher than normal precipitation in the west central region over the past couple months has reduced the drought severity in that portion of province but the southern regions of the province remained largely in an abnormally dry or moderate drought condition.

Ontario: Minimal precipitation throughout much of northwestern Ontario has generated some concern that drought conditions will persist into the spring of 2007. This region recorded between 40 to 65% of normal precipitation in January and continues to be in 10^{th} percentile bracket for fall and winter seasons. Northwestern Ontario was extremely dry over the 2006 growing season and without well above average precipitation over the next couple months, the prospects will not be favorable for the 2007 season. In the South, mild temperatures brought with them sufficient precipitation, with some areas recording around 200% of normal. The monthly average temperatures were two to four degrees C above normal across most of the province.

Quebec and Atlantic Region: Quebec and the Atlantic Region of Canada continue to receive adequate precipitation with the exception of southern New Brunswick and southern Newfoundland, and much of Nova Scotia and Prince Edward Island. The below normal precipitation in the past few months throughout these areas is a slight concern, however, at this time, we have classified these regions as abnormally dry, and will continue to monitor them in the coming months.

Acknowledgements
We acknowledge and thank the following organizations whose reports and assessments are consulted to produce the Canadian portion of the North American Drought Monitor:

AAFC-PFRA District and Regional Offices
Alberta Environment
Alberta Agriculture, Food and Rural Development
B.C Ministry of Environment – River Forecast Centre
Environment Canada
Manitoba Hydrologic Forecast Centre
Natural Resources Canada – Canadian Forest Service
Ontario Ministry of Natural Resources – Low Water Response
Saskatchewan Agriculture, Food and Rural Revitalization
Saskatchewan Watershed Authority

UNITED STATES: January marked the second consecutive month of wet conditions across the central parts of the country, with the storm track shifted a little to the south and east. Above-normal precipitation fell from the southern Rockies and Great Plains to the eastern Great Lakes. Unusually dry conditions occurred along the southern and central Appalachian Mountains in the eastern United States, in the northern Plains to western Great Lakes, and across the Pacific Northwest. Dryness persisted across much of the

Southwest. The month began with unseasonably mild temperatures over the northeastern half of the country. Cold weather moved across the West during the middle of the month and had spread across much of the country by the end of January.

California had the third driest January in the 113-year record this month, Utah ranked 10th driest, Nevada 12th driest, and Idaho 17th driest. For the last six months, California had the fifth driest August-January. Snowpack in the Sierra Nevada Mountain range of California averaged less than 50% of normal. Fortunately in California, a very wet 2006 water year allowed ample water storage in the state's reservoir systems which lessened the impacts of the current dryness. According to data from the USDA Natural Resources Conservation Service, state-averaged reservoirs stood at 62% of capacity, or 111% of normal, as of the end of January. Rain-fed pastures, ranges, and wildlife, however, were in poor to dismal shape, with wildfire danger remaining high, especially in southern California. The dryness in the West was accompanied by a severe cold snap (readings below -2.2°C [28°F] for an extended time) in California during January 12-16 which caused extensive agricultural losses to vulnerable citrus, other fruits, and vegetable crops.

A slow-moving cold front with several waves of low pressure generated moderate to heavy snow, sleet, and devastating heavy freezing rain in the south-central Plains and lower Missouri Valley during the middle of the month, with heavy rain from eastern Texas into the eastern Great Lakes region. Since mid-December, frequent precipitation has produced short-term surpluses in the western Corn Belt and lower Missouri Valley, improving conditions. Drought boundaries in the central and southern Plains and Lower Mississippi Valley were contracted. However, long-term deficits, subsoil moisture deficiencies, and low reservoir levels still existed in parts of northern Oklahoma, southern Kansas, and south-central Texas, maintaining hydrological impacts (H). There has been very little hydrological response in southwest Oklahoma to the recent rains, with many lakes still at historical low elevations. Some parts of Texas, namely from Del Rio and north of Laredo northward to San Angelo and Brownwood, missed out on the recent heavy precipitation as compared to the surrounding area and have significant deficits extending back several months. With reports of low lake levels (e.g., Lake Lometa only at 20% capacity), subnormal stream flows, and low or dry stock tanks, D2-D4 remained. In the north-central states, persistent dryness has had worsening hydrological impacts. Lake Superior was only 5.1 cm (2 in) above its all-time low level for this time of year.

The precipitation pattern in Alaska was mixed, with several stations along the coast receiving above-normal precipitation and several interior stations remaining below normal. Mountain snowpack at the end of the month was less than 70% of normal from central interior Alaska to the north and east. Scattered showers occurred over parts of Hawaii during the middle of the month, but the rain was not enough to improve the abnormally dry (D0) conditions. In fact, D0 had spread across all of the islands by the end of the month. In Puerto Rico, shower activity was confined to the northern half of the island, with little or no rain falling on southern sections. Generally less than 60% of normal precipitation has been observed for the last six months across southern and southeastern portions, so D0 was expanded and D1 added where 3- and 6-month deficits were greatest.

Other changes to the drought depiction during January included a contraction of the D0 areas in the Southeast, but expansion of D1 and D2 in Florida as El Niño rains failed to materialize there. D2 and D3 expanded in south-central Montana, while D0 and D1 contracted over central Colorado. D3 disappeared in northeastern Arizona, but D2 expanded into western Arizona and southern California, and D0 and D1 expanded northward in California and Nevada.

MEXICO: January was 42% wetter than normal with an average temperature (16.0°C) slightly warmer than normal (15.2°C). The National Meteorological Service reported a national precipitation average of 36.0 mm (1.42 inches), compared with an historical (1941-2005) average of 25.3 mm (0.996 inches).

Most of the Mexican territory registered temperatures ranging from normal to above the climatic average; however, the northern states were an exception, where the temperatures were cold enough to allow heavy snow in Chihuahua and Durango states. Livestock agencies in Northern Mexico reported serious damage to pastures where snow and ice covered Chihuahua's crops and rangeland; as a result, the feeding of livestock was hampered across the western half of the state. On the other hand, the accumulation of snow of up to 90 cm will produce great conditions for rangeland and agriculture in the spring, assuring good soil moisture reserves. Also, the Civil Defense Agency of Chihuahua closed temporarily the principle roads and highways located in north, west and south of the state to avoid highway accidents. There were no other reports of damage from the snow in this region.

Large areas of Mexico remain free from drought as a direct effect of a strong and late ending monsoon season in Mexico. While El Niño conditions have developed over the past 7 months, direct effects on Mexico have been very weak with only isolated areas of the north receiving near normal cool-season rainfall. The drought monitor depiction for Mexico is thus dominated by the surpluses in moisture received through October while weak to severe drought (D1 to D2) is shown as persisting or spreading in sections of extreme Northwest Mexico where winter rainfall normally contributes 20% to 40% of the total annual precipitation. The northern Sierra Madre Occidental received rain and snow from a number of cut off lows in January and thus these watersheds remain free of drought.

In the northeast Mexican state of Coahuila extreme drought conditions (D3 to D4) are confined to the area near the Rio Bravo. This drought region is strongly depicted on vegetation indices and it is associated with a long period of annual rainfall deficit over the past 4 to 6 years. Moderate drought conditions (D1 to D2) along the west coast of Mexico (Sinaloa to Colima) reflect the lack of winter rainfall in this region which has a mean minor peak in rainfall in December and January. Again, El Niño conditions have been too weak for subtropical moisture plumes to develop and move into western Mexico. The normally dry interior valleys of the eastern Valley of Mexico continue to show moderate to severe drought conditions (D1 to D2) while the coastal plain of

Veracruz has been very wet this winter. Finally, pockets of drought (D1 to D2) continue across interior sections of central Chiapas to the Pacific coast of Northwest Chiapas. This dry region has persisted since late last summer, but it has not intensified too much as this is the normal dry season in Chiapas.